

COMBUSTION AND FLAME

THE JOURNAL OF THE COMBUSTION INSTITUTE

VOLUME 109

NUMBERS 1/2

APRIL 1997

Contents

K. T. AUNG, M. I. HASSAN, and G. M. FAETH (Ann Arbor, Michigan) Flame Stretch Interactions of Laminar Premixed Hydrogen/Air Flames at Normal Temperature and Pressure . . .	1
MARIA U. ALZUETA, PETER GLARBORG, and KIM DAM-JOHANSEN (Lyngby, Denmark) Low Temperature Interactions between Hydrocarbons and Nitric Oxide: An Experimental Study	25
L. CATOIRE, X. BASSIN, W. INGIGNOLI, G. DUPRE, and C. PAILLARD (Orléans Cedex 2, France) Shock Tube Study of the Effect of Nitrogen or Hydrogen on Ignition Delays in Mixtures of Monomethylhydrazine + Oxygen + Argon	37
A. S. WU and K. N. C. BRAY (Cambridge CB2 1PZ, UK) A Coherent Flame Model of Premixed Turbulent Combustion in a Counterflow Geometry	43
CHRISTOPH ESPEY (University Park, PA), JOHN E. DEC (Livermore, CA), THOMAS A. LITZINGER and DOMENIC A. SANTAVICCA (University Park, PA) Planar Laser Rayleigh Scattering for Quantitative Vapor-Fuel Imaging in a Diesel Jet	65
H. ARISAWA and T. B. BRILL (Newark, DE) Flash Pyrolysis of Polyethyleneglycol Part I: Chemometric Resolution of FTIR Spectra of the Volatile Products at 370-550°C	87
H. ARISAWA and T. B. BRILL (Newark, DE) Flash Pyrolysis of Polyethyleneglycol II: Kinetics Determined by T-Jump / FTIR Spectroscopy	105
C. J. MONTGOMERY, G. KOSÁLY, and J. J. RILEY (Seattle, WA) Direct Numerical Solution of Turbulent Nonpremixed Combustion with Multistep Hydrogen- Oxygen Kinetics	113
LUNG-WEEI HUANG and CHIUN-HSUN CHEN (Hsinchu, Taiwan) Droplet Ignition in a High-Temperature Convective Environment	145
B. J. LEE and S. H. CHUNG, (Seoul 151-742, Korea) Stabilization of Lifted Tribrachial Flames in a Laminar Nonpremixed Jet	163
A. A. BURLUKA, M. A. GOROKHOVSKI, and R. BORGHI (Marseille, Cédex 20, France) Statistical Model of Turbulent Premixed Combustion with Interacting Flamelets	173
J. C. LOU and Y. S. CHANG (Kaohsiung, Taiwan) Thermal Oxidation of Chloroform	188
E. MASTORAKOS and T. A. BARITAUD (Rueil-Malmaison, France), T. J. POINSOT (Toulouse, France) Numerical Simulations of Autoignition in Turbulent Mixing Flows	198

(continued on next page)

H. S. MUKUNDA and P. J. PAUL (Bangalore 560012, India)	
Universal Behaviour in Erosive Burning of Solid Propellants	224
F. N. EGOLFOPOULOS, H. ZHANG, and Z. ZHANG (Los Angeles, California)	
Wall Effects on the Propagation and Extinction of Steady, Strained, Laminar Premixed Flames	237
VADIM N. GAMEZO (Moscow, Russia) and ELAINE S. ORAN (Washington, D.C.)	
Reaction-Zone Structure of a Steady-State Detonation Wave in a Cylindrical Charge	253
K. T. KANG, J. Y. HWANG, S. H. CHUNG (Seoul 151-747, Korea), and W. LEE (Seoul 140-714, Korea)	
Soot Zone Structure and Sooting Limit in Diffusion Flames: Comparison of Counterflow and Co-Flow Flames	266
BOOK REVIEWS	282

COMBUSTION AND FLAME

THE JOURNAL OF THE COMBUSTION INSTITUTE

VOLUME 109

NUMBER 3

MAY 1997

Contents

F. BATTIN-LECLERC, P. A. GLAUDE, G. M. CÔME, and F. BARONNET (Nancy, Cedex, France) Inhibiting Effect of CF_3I on the Reaction between CH_4 and O_2 in a Jet-Stirred Reactor	285
J. C. VASSILICOS (Cambridge CB3 9EW, UK), and N. NIKIFORAKIS (Cambridge CB2 1EW, UK) Flamelet-Vortex Interaction and The Gibson Scale	293
FERNANDO F. FACHINI (Cachoeira Paulista, SP, Brazil) and AMABLE M. LIÑÁN (Madrid, Spain) Transient Effects in Droplet Ignition Phenomenon	303
JEAN R. HERTZBERG (Boulder, CO) Conditions for a Split Diffusion Flame	314
ROBERT D. HANCOCK, KENNETH E. BERTAGNOLLI, and ROBERT P. LUCHT (Urbana, IL) Nitrogen and Hydrogen CARS Temperature Measurements in a Hydrogen/Air Flame Using a Near-Adiabatic Flat-Flame Burner	323
ANDREW W. COOK, JAMES J. RILEY, and GEORGE KOSÁLY (Seattle, WA) A Laminar Flamelet Approach to Subgrid-Scale Chemistry in Turbulent Flows	332
YEU-CHERNG LU, TODD M. FREYMAN, and KENNETH K. KUO (University Park, PA) UV/Visible Absorption Spectroscopy of Dark Zones in Solid-Propellant Flames	342
ATSUSHI NAKAKUKI (Chiba-Ken 270-11, Japan) Heat Transfer in Hot-Zone-Forming Pool Fires	353
P. E. GONGWER, H. ARISAWA, and T. B. BRILL (Newark, DE) Kinetics and Products from Flash Pyrolysis of Cellulose Acetate Butyrate (CAB) at 460–600°C	370
HOWARD PEARLMAN (Cleveland, OH) Excitability in High-Lewis Number Premixed Gas Combustion	382
RANDALL L. VANDER WAL (Cleveland, OH), KIRK A. JENSEN and MUN Y. CHOI (Chicago, IL) Simultaneous Laser-Induced Emission of Soot and Polycyclic Aromatic Hydrocarbons Within a Gas-Jet Diffusion Flame	399
H. ARISAWA and T. B. BRILL (Newark, DE) Kinetics and Mechanisms of Flash Pyrolysis of Poly(methyl methacrylate) (PMMA)	415
R. ZITOUN and B. DESHAIES (Futuroscope Cedex, France) Burning Velocities of Rich H_2 - O_2 Flames under Cryogenic Conditions	427
VLADIMIR P. KARPOV (Moscow, Russia), ANDREI N. LIPATNIKOV (Göteborg, Sweden), and PIOŹR WOLANSKI (Warsaw, Poland) Finding the Markstein Number Using the Measurements of Expanding Spherical Laminar Flames	436

(continued on next page)

MARK T. ALLEN, RICHARD A. YETTER, and FREDERICK L. DRYER (Princeton, NJ)	
High Pressure Studies of Moist Carbon Monoxide/Nitrous Oxide Kinetics	449
PAUL E. DESJARDIN and STEVEN H. FRANKEL (West Lafayette, IN)	
Linear-Eddy Modeling of Nonequilibrium Turbulent Reacting Flows with Nonpremixed Reactants	471
ÜMIT ÖZGÜR KÖYLÜ (New Haven, CT)	
Quantitative Analysis of In Situ Optical Diagnostics for Inferring Particle/Aggregate Parameters in Flames: Implications for Soot Surface Growth and Total Emissivity	488
BOOK REVIEW	501

COMBUSTION AND FLAME

THE JOURNAL OF THE COMBUSTION INSTITUTE

VOLUME 109

NUMBER 4

JUNE 1997

Contents

- A. A. KORZHAVIN, V. A. BUNEV, and V. S. BABKIN (Novosibirsk, Russia)
Dynamics of Gaseous Combustion in Closed Systems with an Inert Porous Medium 507
- ISSAC I. KANTOROVICH and EZRA BAR-ZIV (Beer-Sheva, Israel)
The Effect of Microstructural Transformation on the Evolution of Thermal Conductivity
of Highly Porous Chars During Oxidation 521
- T.-W. LEE, M. FENTON, and R. SHANKLAND (Tempe, AZ)
Effects of Variable Partial Premixing on Turbulent Jet Flame Structure 536
- M. TAGAWA and Y. OHTA (Nagoya, Japan)
Two-Thermocouple Probe for Fluctuating Temperature Measurement in Combustion—Rational
Estimation of Mean and Fluctuating Time Constants 549
- F. A. JABERI, R. S. MILLER, F. MASHAYEK, and P. GIVI (Buffalo, NY)
Differential Diffusion in Binary Scalar Mixing and Reaction 561
- X. D. CHEN (Auckland, New Zealand) and J. B. STOTT (Christchurch 1, New Zealand)
Oxidation Rates of Coals as Measured from One-Dimensional Spontaneous Heating 578
- W. B. FU, B. L. ZHANG, and S. M. ZHENG (Beijing, China)
A Relationship Between the Kinetic Parameters of Char Combustion and the Coal's Properties 587
- K. FIEWEGER, R. BLUMENTHAL, and G. ADOMEIT (Aachen, Germany)
Self-Ignition of S.I. Engine Model Fuels: A Shock Tube Investigation at High Pressure 599
- B. H. CHAO (Honolulu, HI), F. N. EGOLFOPOULOS (Los Angeles, CA), and
C. K. LAW (Princeton, NJ)
Structure and Propagation of Premixed Flame in Nozzle-Generated Counterflow 620
- HONGSHENG GUO, YIGUANG JU, KAORU MARUTA, TAKASHI NIIOKA (Sendai, Japan), and
FENGSHAN LIU (Ontario, Canada)
Radiation Extinction Limit of Counterflow Premixed Lean Methane–Air Flames 639
- J. VANDOOOREN, P. J. VAN TIGGELEN (Louvain-la-Neuve, Belgium), and
J.-F. PAUWELS (Villeneuve d'Ascq Cedex, France)
Experimental and Modeling Studies of a Rich $H_2/CO/N_2O/Ar$ Flame 647
- A. YOSHIDA, T. IGARASHI, and Y. KOTANI (Tokyo, Japan)
Extinction of Turbulent Diffusion Flames by Kolmogorov Microscale Turbulence 669
- F. O'YOUNG and R. W. BILGER (Sydney, N. S. W., Australia)
Scalar Gradient and Related Quantities in Turbulent Premixed Flames 682
- CHARLES S. MCENALLY, ÜMIT Ö. KÖYLÜ, LISA D. PFEFFERLE, and
DANIEL E. ROSNER (New Haven, CT)
Soot Volume Fraction and Temperature Measurements in Laminar Nonpremixed Flames Using
Thermocouples 701